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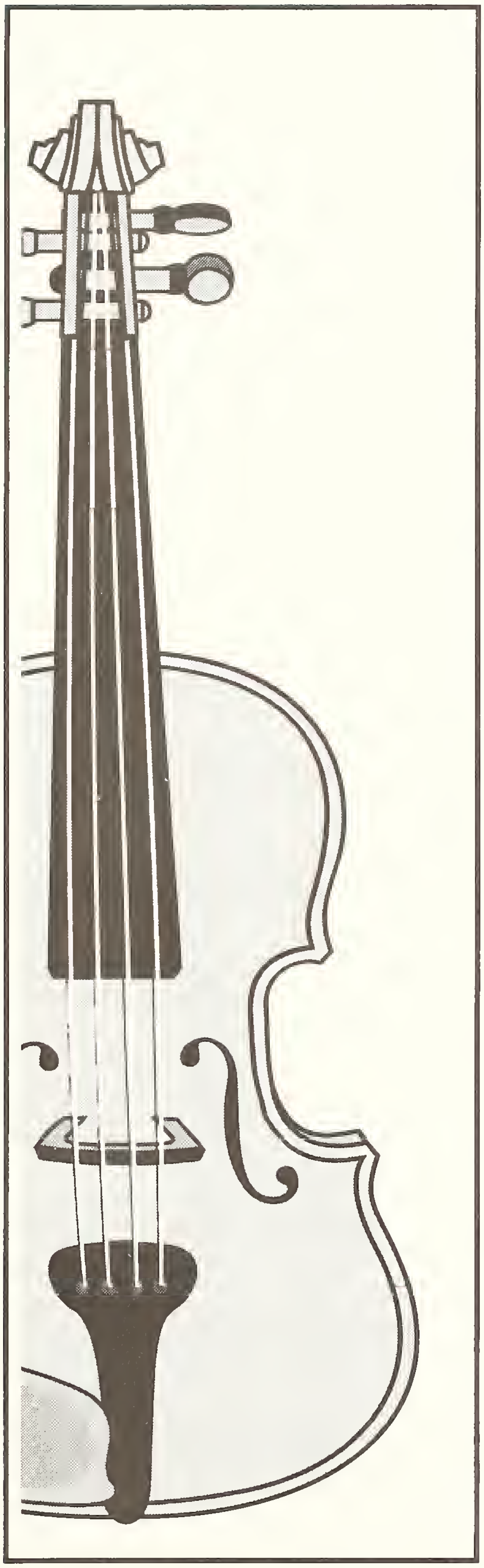
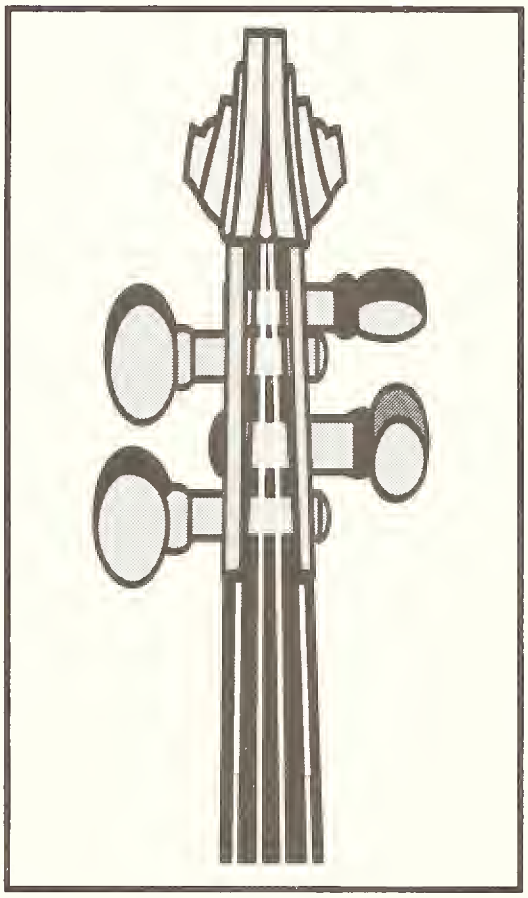
UTCS ComputerNews





What's New in Graphics & Desktop Publishing ?

See Page 8 for details.

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Let's Talk About It: The End of an Era

Dr. Warren Jackson
WCJ at UTORONTO

[The following article is not subject to editorial review.]

Well, gentle reader, the end of an era and the demise of an old friend are now fairly irrevocably in the cards. We have no choice except to plan for the imminent ultimate end to our IBM academic MVS service. We have analyzed the situation extensively and consulted with our Advisory Board, and we have obtained their concurrence for this action. The system will no longer be in production operation after June 30, 1988. Administrative MVS, a completely different service on a separate computer, will not be affected.

We have highly valued our long association with many of you and your continued use of our services and support for our efforts. Thus we make this announcement with real regret, since it may mean that solid long-term working relationships with valued associates could go away. We regret any inconvenience this will cause. However, we are definitely going to try to entice you to move to our CMS service, which is considerably less expensive, and we will, to the extent our resources permit, help you to convert. We will concentrate our conversion efforts initially on large users and those that seem to be really locked in to the MVS service for whatever reason.

The MVS system is the second central machine service that we have been forced to discontinue, the first being the DEC 10. Both are victims of dwindling usage and revenue, a consequence of the economics of changing styles of computing, fueled by the requirement that we charge real money for our services. (The requirement is not really that we charge real money for our services, but that our budget be balanced. This is achieved in part by meeting a revenue target used to offset a certain portion of our expenses. Our revenue target requires that the MVS service at least come close to paying its own way.) The MVS service is earning far less than its income target, not even covering its incremental costs, and we and the University can no longer afford the massive financial burden this service now represents. It contributes a growing deficit every year to our operation, threatening the viability and stability of all our other academic and administrative services.

MVS Warning!

MVS will no longer
be available from UTCS
after

JUNE 30, 1988

The following services will be affected

I.P. Sharp APL
Batch (including CLASS E)
TSO
WYLBUR

If you are currently using any of these services please contact the UTCS staff listed below for assistance in conversion to our VM/CMS service.

Statistical & Numerical Applications
Bill Fehlner **978-6509**

Text & Imaging Applications
John Bradley **978-3995**

Commercial & Affiliated Customers
Ihor Prociuk **978-6875**

The beginning of this situation started four years ago when we went through a process known as monetization. Monetization was recommended originally by a group that, I think, was known as PACCFS, which stood for the President's Advisory Committee on Computer Facilities and Services. It was carried out with full consultation and review with our Board. The process of monetization included a number of steps. First, we completed a costing study to determine the complete costs for all our services. We adjusted the rates we charged to reflect these true costs. We determined that a total of nearly $1.5 million of the UTCS continuing base budget should be disbursed to our users, who could then either purchase services from UTCS for real money or use the funds for other computer-related purposes. We made sure that UTCS was not involved in determining the actual amounts to be allocated to faculties and departments, but only the total. We began then to charge real money for all our services, including central machine services. These services were expected to either earn their way or have their costs reduced (where possible) accordingly. Over the following years, revenue and use of MVS decreased to the point where we sold one of our academic IBM computers, and ran both MVS and and our other IBM academic service, VM/CMS on the remaining computer. Since then, usage of MVS and the revenue associated with it continued to drop. Since there are no other sources of funding available to make up this shortfall, there is no choice but to discontinue the service.

Computer Searches: Another Blow against Drudgery

Martha Parrott
PARROTT at UTORONTO

One of the dreariest tasks in the academic world is "searching the literature" for information and past work on a research topic. Once you find it, *reading* the relevant material is easy. The problem is *finding* that material. As many have happily discovered, *online databases* help to solve this problem. Information on just about any subject you might think of can now be searched by computer.

These valuable workhorses are available because of the fantastic power of computers to manipulate text. A database is simply a collection of interrelated pieces of text or information, which is organized or managed by some kind of program. Many such programs exist for all sorts of microcomputers, as well as for large, mainframe computers. Depending on the way the database is set up, you can use *search criteria* to pull information out of it automatically. For example, you could find all titles by a particular author, or all recorded occurrences of a particular disease after a certain date.

Databases have been set up by institutions, such as governments or national libraries, and by commercial organizations. Incredibly, there now are literally thousands of these databases. Of the ones used for the bibliographic searches we are talking about here, most provide only such information as title, author, source, subject headings, and often abstracts, but some contain the full text as well. Clearly, access to such a database would save you much time and could even provide a more complete and useful bibliography of your topic.

Here is a tiny sample of the databases that might be interesting to members of the U of T community. *Dissertation Abstracts* is cause for rejoicing, particularly among graduate students but also for faculty. In the humanities and social sciences, there are the *MLA Bibliography*, *Psychological Abstracts*, and the *Social Science Citation Index*. Databases also pertain to law, government documents, business, art, education, history, and many other fields. For the biomedical sciences, examples are MEDLINE (covers more than 3500 international biomedical journals since 1966), and *Science Citation Index.* Two of the databases popular among engineers are *Chemical Abstracts* and *Engineering Index*. In addition, many newspaper and magazine indexes are now available electronically, and some full-text news databases too. Infoglobe *(The Globe and Mail)*, *Financial Times*, UPI News, and QUEBAC *(Le Devoir, La Presse, Le Soleil)* are examples.

Generally, these databases are made available by commercial vendors, each vendor providing a number of databases for a subscription fee. Each vendor also has its own way for users to draw information from the databases.

How can you get at all this information? One way to do computer searches is through the University libraries. Robarts, Science and Medicine, and Engineering are the obvious choices, although some of the other campus libraries do online searching as well: the Royal Ontario Museum and Dentistry, for instance.

Searching is done through the Reference librarians, who can also help you determine your search criteria. Having very specific criteria is the most important factor in a successful search. This is usually easy to do in the biological and applied sciences, but it is often difficult in the humanities and social sciences. Before you request your search, have a clear idea of exactly what you want; try to think of specific terminology associated with your topic; don't forget to consider the time frame of the desired information.

While carefully chosen criteria are important in a successful search, they are absolutely essential in an economical one. Cost naturally depends upon the length of time spent online and upon the number of items that answer the criteria. The more specific your criteria, the more useful the references retrieved. The costs of individual searches vary widely, but the average cost of a search at Robarts Library is about $35; the average at Science and Medicine is about $15.

It is also possible to do your own searching. For this you need a microcomputer, a modem, a communications package, and a subscription to a database or group of databases. The Science and Medicine Library is planning a nine-hour course in the spring, to teach personal use of MEDLINE. (For more information, contact Nancy Young at 978-8619.)

Computer searches are helpful in many ways, saving researchers a lot of the labour of information retrieval. Computer technology is also being developed in new ways, to aid researchers. In future articles, we will look at compact-disc technology and its applications in computerized information retrieval.

What Can Math Coprocessors Do For Me?

Reinhard Schuller
SCHULLER at UTORONTO

You would love to have a machine from the new IBM PS/2 line of microcomputers. In fact, you can't wait to get your hands on the OS/2 operating system. But reality interferes with your dreams as you realize that such purchases are out for now, that you're going to be stuck with your IBM PC or XT for some time to come. Does this mean all that wonderful new power will remain beyond your reach? Not at all. Let's look at how Math Coprocessors can help to speed up your numeric applications.

The family of computer chips, the 8087, 80287, and 80387, were specfically designed to perform floating-point calculations. They perform arithmetic with much more precision than the microprocessors that run the computer. The 8087 is designed to work in the IBM PC, XT, and PS/2 model 30. The 80287 works with the AT, and with the new PS/2 model 50 and model 60. The 80387, which was not available for testing, can be installed in the PS/2 model 80, or in any machine with an 80386 processor.

The Math Coprocessor can do more than simple arithmetic; it can also perform functions such as logs and exponents to the base 2 on numbers up to 18 digits in length, trigonometric functions, and many other tasks.

Some benchmark tests were run to determine the improvement when a Math Coprocessor was installed. Programs written in Turbo Pascal Version 3 were used as the benchmarks. The **first test** summed the reciprocal of the first 10,000 numbers. That is, I timed how long it took to calculate:

1/(1*1) + 1/(2*2) + ... + 1/(10000*10000)

This first program uses only simply arithmetic addition, division, and multiplication. The **second test** made use of mathematical functions; it calculated the sum of the expression:

exp(ln(sqrt(1*1))) + exp(ln(sqrt(2*2))) +...
+ exp(ln(sqrt(1000*1000)))

The following table gives the results:

MACHINE	FIRST TEST *(seconds)*	SECOND TEST *(seconds)*
4.77 MHz IBM PC	90.75	103.44
4.77 MHz IBM PC (with 8087 Coprocessor)	9.72	1.65
6 MHz Zenith AT clone	29.88	33.07
6 MHz Zenith AT clone (with 80287 Coprocessor)	5.22	1.21
16 MHz Zenith (with 80386 processor)	14.13	15.93

The 16 MHz Zenith is one of the new generation machines, featuring the same processor as the PS/2 model 80.

When the **second test** was carried out on the IBM PC to 10,000 digits instead of the original 1,000, it took over 17 minutes without the Coprocessor. When the Coprocessor was installed, the PC took a mere 16.15 seconds!

As expected, the machines with the faster internal clock speeds, i.e., those progressing from 4.77 MHz to 16 MHz, complete the task faster. The improvements in the times when the Math Coprocessor is used are astounding. What is of note, however, is that the relative improvement when an 8087 is installed, is much greater than the relative improvement when an 80287 chip is present. This is due in part to differences in how the 8087 and 80287 work with the microprocessor that runs the computer. The 8087 can get information from the system independently and carry out its instruction, leaving the main microprocessor free to execute other instructions. Conversely, the 80287 has its information passed from the main microprocessor, and thus both are tied up during this process.

Why is any of this useful? Applications such as spreadsheets (e.g., Lotus 1-2-3 and Quattro), statistical programs (e.g., SAS/PC and SPSS/PC+), or programming languages (e.g., WATFOR-77, Microsoft FORTRAN, QuickBASIC, Turbo BASIC, C, and Pascal) can all make use of the Math Coprocessor. If you are using an IBM PC/XT in particular, the presence of a Math Coprocessor can make a tremendous difference for numeric or related applications.

Using WordPerfect Merge From dBASE Files

Paul Roth
PROTH at UTORONTO

A number of people on campus now have both WordPerfect and dBASE III (or dBASE III Plus) on their IBM or compatible micros. This article describes how to transfer information from dBASE to WordPerfect in order to use WordPerfect's Merge facilities to produce customized letters or mailing labels.

In the most common application of dBASE III, a collection of names and addresses is kept in a dBASE file. The task is to generate a WordPerfect file containing this information. Merge format in WordPerfect essentially consists of one *record* per person, with each record containing the same number of *fields*. The fields are usually something like Title, Firstname, Lastname, Addr_Line1, Addr_line2, City, Province, Postal. In Merge format, each field must reside on a separate line, ending with a ^R (read this as "Control-R"). The last field (e.g., Postal) should also reside on its own line, but it must end with a ^E to signify "end-of-record."

The corresponding dBASE file contains character-field equivalents of the above fields, ideally in the same order. The following steps are required to transfer the data:

1. In dBASE, open the file, e.g., USE NAMES. Now, simply copy the fields to an ASCII (raw text) file (let's call it TEMP):

```
copy to temp delimited       (if there are
                             no other fields
                             in the dBASE
                             file)
```

or

```
copy to temp delimited fields title,firstname,lastname,
      addr_line1,addr_line2,city,province,postal

                             (if the fields were
                             in some other
                             order, or if the
                             file contained
                             other fields
                             which we do not
                             wish to transfer)
```

Then close the file and exit dBASE.

This creates a file called TEMP.TXT, which contains all character fields surrounded by double-quotation marks ("), all fields separated by commas, and all information for one record on one "line." This line consists of the information for one record, followed by an ASCII carriage-return, linefeed sequence.

To make sure the file is as you want it, at the DOS prompt, enter:

```
type temp.txt
```

The contents will flash by, with each "record line" wrapping to as many lines on the screen as necessary to display its entire contents. (The screen can be frozen by pressing <Ctrl-NumLock>, and resumed by later pressing any key.) When you have seen enough of the file, press <Ctrl-Break> to return to the DOS prompt.

2. You are now ready to convert the file to WordPerfect Merge format. You will need the file CONVERT.EXE, which comes with WordPerfect. Let us assume for the moment that all your software resides in the same directory on a hard disk, or that at least the DOS PATH is set so that all the dBASE and WordPerfect software is available to you.

You then run the CONVERT program. It should resemble the following dialogue (what you type in is shown in bold, with <Enter> meaning "Press Enter"; comments are in brackets):

```
C:>convert<Enter>
Name of input file? temp.txt<Enter>
Name of output file? temp.add<Enter>
Type of file? 7<Enter>

                         [Tell CONVERT that you
                         wish to convert to
                         WordPerfect Merge;
                         this is usually option 7.
                         In WordPerfect 4.2, this
                         option is labelled as "7
                         Mail Merge to WordPer-
                         fect Secondary Merge".]

Field Delimiter? ,<Enter>
Record Delimiter? {13}{10}<Enter>
Characters to be stripped? "<Enter>
C:>
```

You now have a WordPerfect Merge file called TEMP.ADD, which can be used in WordPerfect. At this point, you may erase the TEMP.TXT file, as it is no longer needed.

The secret of the entire process lies simply in telling the CONVERT program what the delimiters and strip-characters are. The response "{13}{10}" tells the program that an ASCII 13 (the Carriage-return character) and an ASCII 10 (the Linefeed character) separate records in the input file. You also tell it that the field delimiter is a comma, i.e., commas separate fields in the input file TEMP.TXT. Finally, when you created the

DELIMITED file in dBASE (Step 1, above), dBASE surrounded character fields with double quotes. These are not desirable in the final Merge file, so you tell CONVERT to strip them out of the output file.

You will find, if you look at TEMP.ADD in WordPerfect, that the first two records look something like this:

```
Prof.^R
John^R
Jones^R
Room 13^R
Med Sci Bldg^R
Toronto^R
Ontario^R
M5S 1A1^E
Miss^R
Penelope^R
Smith^R
Dept. of History^R
James Smith Hall^R
Calgary^R
Alberta^R
T3E 1T8^E
```

3. You can now create customized letters in WordPerfect. To merge the new TEMP.ADD file with a document *template*, do a Merge (<Ctrl-F9>, name the Primary file as your document template, and the Secondary file as TEMP.ADD). The template includes Merge codes embedded in the document. Here is a simple example of a template:

```
  Dear ^F1^ ^F2^ ^F3^:
     Welcome to the wonderful Computer Club of ^F6^,
which is an intercity conglomerate.
```

would generate:

```
  Dear Prof. John Jones:
     Welcome to the wonderful Computer Club of
Toronto, which is an intercity conglomerate.

  Dear Miss Penelope Smith:
     Welcome to the wonderful Computer Club of
Calgary, which is an intercity conglomerate.
```

and so on.

The "^Fn^" construct in the template document is a WordPerfect merge-code (generated by <Alt-F9><F><n>) for "field number n". Thus ^F3^ refers to the third field in the Secondary Merge file (TEMP.ADD), i.e., Lastname.

Each customized letter can be printed immediately, or the entire group can be saved as one file for later printing.

The dBASE-WordPerfect connection is becoming more and more popular. Knowing how to move data smoothly between the two packages should increase your enjoyment of both.

Courses! Courses!! Courses!!!

Irene Rosiecki
ROSIECKI at UTORONTO

To keep up with the ever growing need for our microcomputer courses, and to give you an opportunity to choose a course best suited to your schedule, listed below are our current course offerings through June 1988.

The newest additions to the UTCS microcomputer course offerings are a PageMaker course on the Macintosh, and a Microsoft Word course on the IBM PC. People using PageMaker on the IBM can attend the PageMaker course, as the version of PageMaker for the IBM PC is almost identical to PageMaker on the Macintosh.

Also new is the Desktop Publishing seminar. This seminar is for people interested in seeing some of the more popular desktop-publishing programs and equipment; you will also get some sense of how desktop publishing may be useful in your environment.

Apart from the Desktop Publishing seminar, all courses at UTCS are hands-on, providing each student with a microcomputer during the course. Class size is kept to a minimum, allowing for more student-teacher interaction. Registration is handled on a first-come, first-served basis. UTCS courses are usually offered on an ongoing basis every 4-6 weeks.

For a complete list of UTCS Microcomputer Courses, and to find out about course fees, please contact:

UTCS Education Office
4 Bancroft Avenue
Room 217 Phone: 978-4565

CONIBM101 - Microcomputer Concepts (IBM)
Date: March 28, 1988
Time: 2:00-5:00 p.m.

dBASE101 - Introduction to dBASE III Plus
Date: March 7-11, 1988
Time: 3:00-5:00 p.m.

Date: May 9-13, 1988
Time: 1:00-3:00 p.m.

DOS101 - Introduction to PC-DOS
Date: April 11-15, 1988
Time: 1:00-3:00 p.m.

Date: June 6-10, 1988
Time: 2:00-4:00 p.m.

DSKTOP101 - Desktop Publishing Seminar
Date: May 26, 1988
Time: 10:00-3:00 p.m. NEW

LOTUS101 - Introduction to Lotus 1-2-3
Date: March 14-18, 1988
Time: 9:00-12:00 noon

Date: April 18-22, 1988
Time: 2:00-5:00 p.m.

PGMAKE101 - Introduction to PageMaker on the Macintosh
Date: February 29-March 4, 1988
Time: 10:00-12:00 noon
NEW

Date: May 16-20, 1988
Time: 10:00-12:00 noon

SASPC101 - Introduction to SAS on the IBM PC
Date: March 7-11, 1988
Time: 1:00-3:00 p.m.

Date: April 11-15, 1988
Time: 11:00-1:00 p.m.

Date: June 13-17, 1988
Time: 3:00-5:00 p.m.

SASPC201 - Intermediate SAS Applications on the IBM PC
Date: May 9-13, 1988
Time: 3:00-5:00 p.m.

WORDIBM101 - Introduction to Microsoft Word on the IBM PC
Date: April 4-8, 1988 NEW
Time: 9:00-12:00 noon

WORDMAC101 - Introduction to Microsoft Word on the Macintosh
Date: April 11-15, 1988
Time: 9:00-12:00 noon

Date: June 13-17, 1988
Time: 9:00-12:00 noon

WRDPERF101 - Introduction to WordPerfect
Date: March 21-25, 1988
Time: 9:00-12:00 noon

Date: April 25-29, 1988
Time: 9:00-12:00 noon

Date: May 16-20, 1988
Time: 9:00-12:00 noon

Date: June 6-10, 1988
Time: 9:00-12:00 noon

Date: June 7, 9, 14, 16, 21 EVENING
Time: 6:00-9:00 p.m.

WRDPERF301 - Advanced WordPerfect Topics
Date: March 7-11, 1988
Time: 11:00-1:00 p.m.

Date: May 30-June 3, 1988
Time: 9:00-11:00 a.m.

Graphics and Desktop Publishing

John Bradley
BRADLEY at UTORONTO

It's been a long time coming, but developments in computer software and hardware in the past year or so have finally made the merging of text and graphics a practical reality for almost anyone. What has happened? We feel that several important developments over the past few years have made this possible:

- First came the development of graphics-oriented environments such as the Apple Macintosh's Desktop, and, more recently, those available on the IBM PS/2 or PC machine via Windows or GEM. This advance made it practical to show both text and graphics on the screen at the same time.
- Next was the development of relatively inexpensive but powerful personal laser printers. Still foremost in this area is the large number of PostScript printers such as the Apple LaserWriter. With these printers both high-quality text and graphics can be printed. Recent improvements in software and font selection for the Hewlett-Packard LaserJet series have also made them more serious contenders.
- Then came new software that allowed the effective merging of text and graphics into a single document—the so-called desktop publishing programs, such as Aldus' PageMaker, Xerox's Ventura, or Quark's XPress.
- Finally, there has been the appearance of high-quality and sophisticated graphics-oriented hardware and software—high-quality graphics-drawing software such as Adobe's Illustrator, and improved image scanners, such as DEST's PC 2000 series scanners.

The quality and flexibility of graphic images depend on two interrelated choices: (1) what software is used to create the image, and (2) how the images are stored. For information about ways in which images are stored, see "Bit-Mapped, Grey-Scale, and Object-Oriented Images," opposite this page.

Graphic images are commonly created in three ways:

- You might "draw" an image or create it manually using paint software such as MacPaint or PC Paintbrush. In these programs, you work with the bit-mapped image directly—by drawing on the screen, you change dots on the image grid from black to white, or vice versa. Other drawing programs are object-oriented, permitting you to work with graphical objects such as boxes, lines, curves, and text. Basic object-oriented graphics programs such as MacDraw are best suited for the production of simple line diagrams. CAD programs are usually much more sophisticated versions of programs like MacDraw, but they are oriented towards the engineering design of physical objects. More sophisticated art work (e.g., the violin shown opposite this page) is still practical with only a few programs, such as Adobe's Illustrator.
- Presentation-graphics software allows you to produce graphs and charts of various types to display numeric data. For example, a program such as Lotus 1-2-3, Excel, or Cricket Graph takes numeric data you give it (perhaps created in a spreadsheet) and displays it in various graphical forms. The sample bar chart (*Figure 1*) was produced using Cricket Graph.

continued on page 10

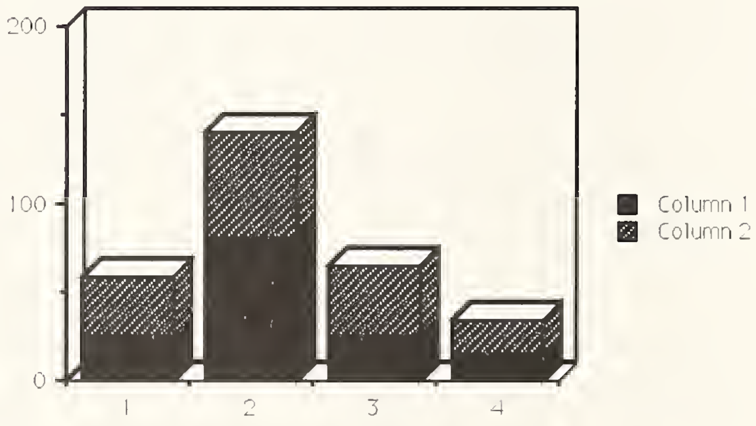


Figure 1: Bar chart produced using Cricket Graph

Bit-Mapped, Grey-Scale, and Object-Oriented Images

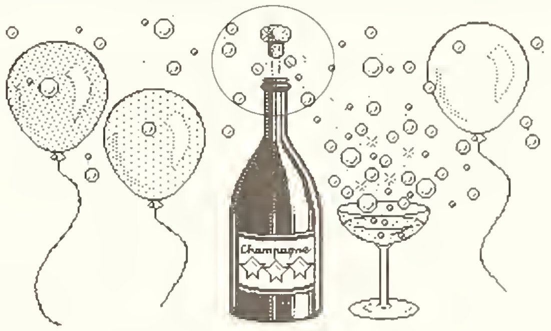
The way image information is stored in a computer file has a significant effect on both what you can do with the image and what quality of printing you can expect. Basically, images are stored using one of two approaches: bit-mapped and object-oriented. In the accompanying illustrations, the party scene is a bit-mapped image, and the violin is object-oriented. A portion of each image has been much expanded to illustrate one of the principal differences between the two methodologies.

In the **bit-mapped** format, the file contains essentially a snapshot of the screen. As on the computer screen, the image is formed by dividing the picture into a grid of small dots (the dot size is usually small enough to allow at least 72 dots per inch in each direction). Each dot is either white or black, depending on its place in the image. The name "Paint format" comes from Apple's MacPaint program, the first commercially successful program of this kind. Similar programs, such as PC Paintbrush, exist for the IBM PC.

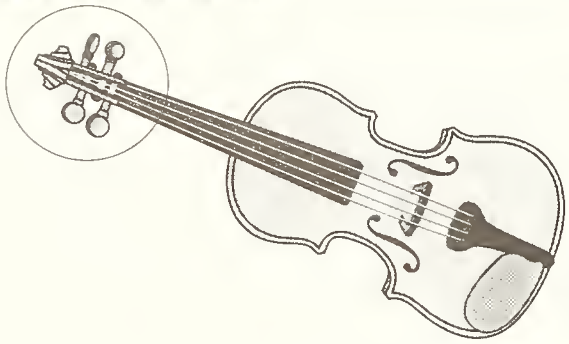
The graininess of the image becomes evident when the picture is enlarged. This is because the only information in the file is whether or not each dot on the grid is "on" or "off" (black or white). When the image is enlarged, the dots making up the image are also enlarged. Hence, the size of the dots in the original picture (called the picture's *resolution*) is important in determining the picture quality.

In **object-oriented** images, a description of the picture is stored in terms of the graphics objects that make it up. The violin image was created by Adobe's Illustrator software. In it, the violin is described as a number of straight and curved lines, and shaded areas. The software that displays the picture must convert this information for printing or display purposes. Note that enlarging the picture does not degrade the quality of this type of image. Object-oriented images correspond to the commercial printer's "line art" images.

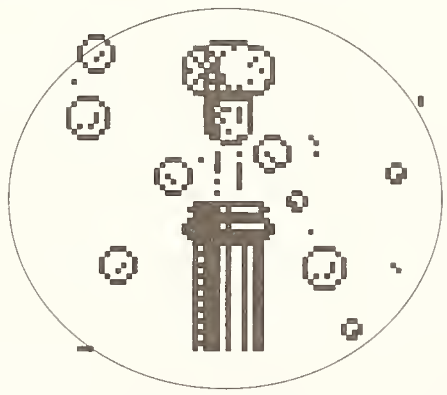
Recently, software and scanning hardware have become available that can create an extended type of bit-mapped image. Called **grey-scale**, it is similar to bit-mapped in that the picture is divided into a grid of small dots. However, each dot can take on shades of grey, rather than just black or white. This format most closely corresponds to the commercial printer's halftone image.



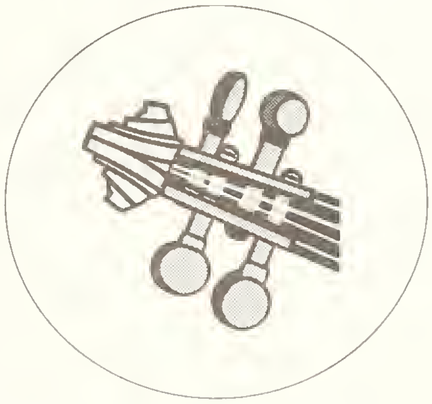
bit-mapped image



object-oriented image



enlarged section of bit-mapped image



enlarged section of object-oriented image

- Preprinted images such as photographs can be processed by a device called a *scanner*, which looks at an image on a piece of paper and (usually) converts it to a bit-mapped or grey-scale image. Newer scanners, which can produce grey-scale images, do a remarkably high-quality job! A sample scanned image, as scanned by one of DEST Corporation's scanners, is shown in *Figure 2* below.

Once you have the image you want, you must combine it with your text. In some cases, your word processor might allow you to incorporate a graphic. Lotus Manuscript and Microsoft Word, for example, both allow you to say "place a graphic here" in the midst of your text. Unfortunately, the support for graphics in word processors is still rather limited. For example, although both Lotus Manuscript and Microsoft Word support some merging of a few types of graphical images on the IBM PC, neither will show you the graph on the screen while you are working with the text.

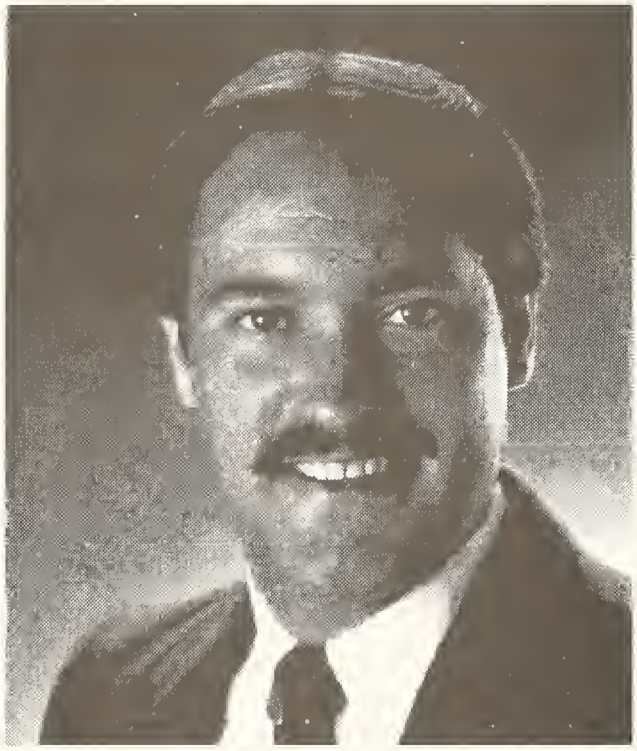
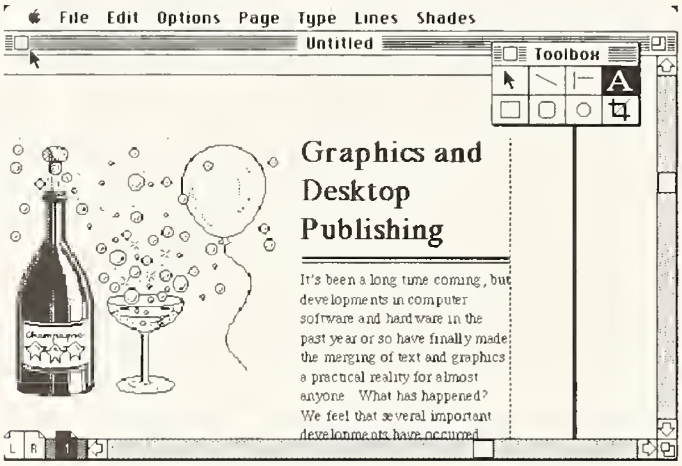


Figure 2: Image scanned by one of DEST Corporation's scanners producing a grey-scale image.

These days, most people perform the job of merging text and graphics with desktop-publishing (DTP) software such as Aldus' PageMaker or Xerox's Ventura. With these programs, you import your text (in word-processing files) and your graphics (in graphics files) into your DTP program and place the text and graphics on pages. *Figure 3* shows the screen during the creation of a document with PageMaker. The document creator has taken some text that was originally created with Microsoft Word and placed it beside the "party" figure that was created with a Paint program. The screen is showing the top right corner of the page. On the screen, you can see both the text and the graph placed on the page—in the positions where they will appear when printed. Essentially, DTP software provides the electronic equivalent of "electronic pasteup." All of the text and images in this article were created and assembled electronically.



Graphics and Desktop Publishing

It's been a long time coming, but developments in computer software and hardware in the past year or so have finally made the merging of text and graphics a practical reality for almost anyone What has happened? We feel that several important developments have occurred

Figure 3: Screen of a PageMaker document with incorporated text and graphics.

The first popular program of this type was Aldus' PageMaker. Nowadays, the competition in desktop publishing is pretty high, and you can find several programs for the IBM PC or PS/2 machines and for the Macintosh.

Problems:

Although desktop-publishing hardware and software have made merging text and graphics relatively simple, some problems remain. The biggest one is related to standards for graphics files. Basically, for both bit-mapped and object-oriented images, there is no widely used single file format to store the image. Thus, if a program like Aldus' PageMaker is to support the merging of images from a large assortment of graphics programs, it has to be able to decode many different file formats. In reality, no DTP program supports all existing graphical file formats. It is possible, therefore, to purchase a graphics program incapable of writing a file that can be read into your DTP program! This is more of a problem on the IBM PC than on the Macintosh.

The grey-scale "TIFF" file format is apparently becoming a standard for grey-scale images on both the IBM PC and Macintosh computers. However, it is a relatively recent development (particularly on the IBM PC), and not all DTP programs can read it. For example, the IBM PC's Ventura program cannot read TIFF image files.

The high-quality scanning of images is still evolving. Most scanners cannot produce true grey-scale images, and, instead, convert shades of grey into bit-mapped formats using a process called "hardware dithering." The scanner emulates a halftone screen effect on a bit-mapped image by forming variously sized half-tone dots out of groups of smaller bit-mapped grid dots. For various reasons that we won't discuss here, dithering tends to produce inferior images, particularly when printed on very high-quality devices such as the Linotronic typesetter.

The final problem is the size of graphics files. This is not so much a concern with object-oriented representation (line art), but size is definitely an issue with bit-mapped or grey-scale images. Those images for files tend to be large; for example, a bit-mapped image that is about one sixth of a page at 300 dots per inch can take up about 300K of storage. Even on a hard-disk machine you may find that you don't want to keep too many bit-mapped images around. Generally, object-oriented graphics files are usually much smaller.

Where is Colour?

An obvious enhancement for computer-created graphics is better support of colour. It is already possible to get colour images on the screen of your computer, although the quality is usually suitable only for display graphics such as charts and graphs. In addition, very primitive colour printers are available at personal computer prices. High-quality screen and printed colour is another matter, however. High-quality screens are priced beyond most of us, and personal-oriented quality colour printers are just beginning to appear—although they will not be cheap. Furthermore, the subsequent production of multiple copies for distribution of a colour document is neither convenient nor inexpensive. Colour photocopiers are still rare. The beginnings of high-quality colour printing may become available in the near future; at present, however, colour is waiting for convenient, inexpensive, and high-quality output and reproduction devices.

Another Evening WordPerfect Course

The evening Introductory WordPerfect course scheduled from February 16 to March 1 is already full; we have therefore scheduled another one for June 7-21 from 6:00 p.m. to 9:00 p.m. The course is held twice a week on Tuesday and Thursday evenings.

We are trying out evening courses for people whose heavy schedules put our daytime sessions out of reach. If response to these sessions is positive, we will consider offering other UTCS microcomputer courses in the evening as well, starting in the fall.

Registrations are handled on a first-come, first-served basis. As with all our other hands-on courses, class size is kept to a minimum to ensure better student/teacher interaction and to allow each student an IBM PC to use throughout the course. For further details on courses or registration fees, please call Irene Rosiecki at 978-4565 or drop into the UTCS Course Registration Office, 4 Bancroft Avenue, Room 217.

WordPerfect 5.0

Pat Hood
PHOOD at UTORONTO

WordPerfect's pending release of Version 5.0, expected in March, is of particular importance to the University of Toronto community. Version 5 is supposed to correct the printing deficiencies of Version 4.2 and allow you to combine and preview graphics and text on a page. Unfortunately, the enhancements balloon the package beyond the capabilities of the dual-floppy drive, 256K IBM PC and will ultimately cost some users more than just the expected US$50 upgrade fee.

Five areas of major enhancements have been announced. Other enhancements will be announced when the new version is actually released, presumably to keep WPCorp one step ahead of the competition while not offering more than they can achieve.

Major Enhancements

- Intelligent Laser Printing
- Integrated text and graphics
- Preview text and graphics on screen
- Master Document linking multiple files; Automatic Referencing of page, footnote, chapter numbers
- 1000 Character Support

Summary of Promised Enhancements

1. Intelligent Printing

WordPerfect 5.0 will cater to laser-printer users, according to WPCorp's Information Services. Those of you battling with font numbers and pitches to get decent output on laser printers will be pleased to see the following changes:

Measurements will be made in absolute values (inches, centimetres, points) rather than characters per inch. Margins of 2.5 centimetres will remain constant through all typeface and font-size changes. Random font mixing will not affect tab settings or column definitions.

Vertical and horizontal spacing will be automatically adjusted to match the font and font size selected. Previously, horizontal spacing was controlled using a pitch value (estimated characters per inch) and vertical spacing was controlled by line spacing (single, double, etc.).

New character formats include *italics*, double underline, colours for colour printers, and gradations of point sizes from "fine" to "extra large." We have been assured by WPCorp that you will be able to specify point sizes without having to define the text as one of their special "named" sizes. These formats will be seen on the screen only under certain conditions; see "Problems" below.

Documents designed for one printer will print "intelligently" on other printers, and you will be able to specify how certain elements, such as graphics or large font sizes, will be handled on a less-capable printer. WordPerfect will continue to support the printers found in Version 4.2, but the focus will move to laser printers for they will handle the new features best. In the new release, printing is being demonstrated with the Hewlett-Packard LaserJet Series II printer.

2. Integrated Text and Graphics

A high profile new feature is the ability to combine graphics images with text. In WordPerfect 5.0 you will be able to place graphic images created in other software packages (charts from Lotus, drawings from *paint*-type packages) anywhere on the page, within headers and footers, within a line of text, or you may attach a graphic to a paragraph so that when the paragraph moves from page to page the picture goes with it.

You will also be able to:

- size, crop, scale, and rotate graphics
- draw borders around graphics, choosing a style and thickness
- attach captions to graphics for identification

Graphics files you will be able to use include Lotus PIC files, PC Paintbrush, Freelance and other CGM Metafiles, Windows Paint, TIFF files, HPGL Plot files, PC Paint Plus, Dr. Halo II, Publishers Paintbrush, GEM Paint, and graphics from PlanPerfect.

For programs not directly supported by Version 5.0, a screen utility will be included that will capture a screen image for use in WordPerfect.

3. Improved Preview

Print Preview was added in WordPerfect 4.2. Preview will be improved in Version 5.0 so that you can view the intelligent printing and integrated graphics enhancements. You will need to use Preview to see how text will look when printed, to view graphics, and to display an entire page of text and graphics at once. In Preview you will be able to zoom in for a detailed look and view facing pages. Outside of Preview, the WordPerfect screen will look much as it does now.

4. Master Documents and Automatic Referencing

The "master document" enhancement will allow combining of files (book chapters, for example) for generating page numbers, tables of contents, lists, indexes, footnotes, endnotes, and references. The referencing of page numbers, paragraphs, outlines, footnotes, endnotes, and figures will also be added. Those of you producing large documents like theses should find the task easier because of these much needed enhancements.

5. Increased Character Support

The Version 5.0 promotional material says that "over 1000 characters including Greek, math, symbols" will be supported in the new version. What this actually means remains to be seen.

These are the major enhancements you may expect in WordPerfect 5.0. Once we receive the new version, it will be reviewed here in *ComputerNews*.

The information in this article has been culled from three sources: "Introducing WordPerfect 5.0", an information sheet distributed at COMDEX and the Canadian Computer Show; The WordPerfectionist, *Volume II, Number 10 — the monthly newsletter published by the WordPerfect Support Group; and* WPCorp Report, *Volume I, Number 1 — a new quarterly report from the WordPerfect Corporation. J.B. Marketing, the Canadian distributor of WPCorp products, and WPCorp's Information Services group in Utah could not offer any additional information.*

Problems for Current Users

As mentioned at the beginning of this article, the enhancements to WordPerfect will not be without additional cost to some users. First, WordPerfect 5.0 will no longer run within the 256K RAM commonly found in older PCs. WPCorp has suggested that 640K will be necessary. Also, a "speed up" board may be required on machines running at less than 6 MHz, depending on the complexity of the documents created. Second, because of the size of the new software (it consists of eight floppy diskettes), you will need a hard disk to use the program with some degree of ease and bearable speed. Third, a graphics adapter with a monochrome or colour monitor will be needed to see font changes and graphics in Preview. WordPerfect 5.0 will support the Hercules Graphics Card Plus, the Hercules In-Color Card with RamFont, CGA, EGA, VGA, and the IBM 8514A. If you use the Hercules Graphics Card Plus with RamFont, you will be able to see italics and font changes while editing as well as in Preview. Finally, though optional, a laser printer is needed to achieve the best printed results. Fortunately, UTCS provides PostScript laser printing and typesetting at competitive University rates.

Not everyone will need or want to upgrade to Version 5.0 of WordPerfect. You may not need the printing enhancements if dot matrix or daisy wheel printing fulfills your needs. You may not be able to afford to upgrade your microcomputer to get a decent level of performance from the new software. If you stay with WordPerfect 4.2, you have these assurances from WPCorp:

- Version 5.0 will have a "Save in 4.2 format" command to allow transfer of documents between versions.
- WPCorp will continue to support Version 4.2 until 1990.
- If you are running WordPerfect on a noncompatible (such as DEC Rainbow, TI Professional, Tandy 2000, Apricot, Victor 9000, NEC APC II, or Zenith Z/100), you will also continue to receive support until 1990, but there will be no new releases of WordPerfect for your machine.

WordPerfect on the Macintosh

Pat Hood
PHOOD at UTORONTO

WordPerfect 1.0 for the Macintosh is to be released in Canada sometime in January 1988. It is not surprising that this market-share giant has added a Macintosh version to those for the IBM PC, Data General, DEC VAX, and Apple II. What is surprising, however, is how well WordPerfect's heavy reliance on function-key combinations and hierarchical menus has survived the transition.

True to the Macintosh interface, WordPerfect incorporates the new hierarchical menus found in System 4.1 and higher. The use of the mouse, menus, and keyboard shortcuts is similar to other Macintosh applications. It runs on the Mac 512KE, Plus, SE, and Mac II (two floppy-disk drives or hard disk recommended) and supports PostScript printers, plus the Apple ImageWriter and ImageWriter II. A special File Manager has been included (equivalent to List Files in the PC 4.2 version) to manage files on the Desktop from within WordPerfect.

The Macintosh version of WordPerfect contains most of the functions of its PC counterpart. The three exceptions are mathematics, sorting, and the table of authorities. The first two of these functions, mathematics and sorting, will be included in later versions of the product.

Files created in the Macintosh version are interchangeable with those from the PC version. Departments with both PCs and Macintoshes can use WordPerfect on both machines, exchanging files as required. While this scenario has been possible for some time using Microsoft Word, Word has not attained as large a following on campus as has WordPerfect. PC laser-printer owners who have been struggling with WordPerfect's inadequate font specification tools could switch to the Macintosh version, if they have the money to do so. Since the Macintosh handles measurements in absolute values (inches, centimetres, points), the font specifications are easier. Errors are easy to rectify because the text is displayed as it will be printed. Within a department, WordPerfect on a Macintosh could be used as a previewing device for text entered and formatted on a PC.

We hope to review this product and WordPerfect 5.0 for the PC (see preceding article), when they are finally released.

Est-ce Louis XV qui a dit: «Après moi, le déluge»?
Adam Smith hat sehr wohl gesehn, daß in „Wirklichkeit die...
Por favor, senor ¿donde esta la biblioteca municipal?

WordPerfect Foreign Language Editions

A little known aspect of WordPerfect for the IBM PC is that it is available in a variety of foreign languages: Danish, Dutch, Finnish, French, German, Icelandic, Norwegian, Spanish, and Swedish. Portuguese and Italian editions were to be released late in 1987. The prices are about 10-20% higher than the standard US list prices, depending on where it is purchased.

Foreign Spellers (except Finnish) can be purchased separately for use with WordPerfect. If you regularly produce documents in English and a second language, obtaining a foreign Speller would simplify your spell checking.

Microsoft Word Support from UTCS

John Bradley
BRADLEY at UTORONTO

UTCS is improving support for users of Microsoft Word on both the IBM PC and the Apple Macintosh. Our present efforts focus on two areas:

- **Courses**

  A course on Word on the Macintosh is already offered, and a new one for Word on the IBM PC will be available shortly.

- **Advising and Consulting**

  Improved support for both versions will be phased in over the next several months.

Our courses and advising/consulting support will concentrate on Version 3.01 for the Macintosh and Version 4.0 for the IBM PC. Watch *ComputerNews* for announcements about courses and other support activities.

New Word and PageMaker Courses

PageMaker on the Macintosh

Although you may have missed the announcement in the December issue of *ComputerNews*, we are now offering an introductory course on the **PageMaker** desktop-publishing package. This ten-hour course, aimed at experienced Macintosh users, teaches you how to produce a simple report, newsletter, and flyer using the appropriate PageMaker tools. The topics covered include: preparing text and graphics for use in PageMaker documents; creating Master Pages; placing text and graphics on pages; entering, editing, and formatting text; working with text blocks; cropping and sizing graphics. Page composition and design elements will be discussed briefly. During the final class, special attention will be given to the specialized documents students wish to produce, such as brochures, calendars, forms, and advertisements.

While the course is taught using the Macintosh microcomputer, IBM PC users would also benefit from it. PageMaker on the PC is almost identical to its Macintosh counterpart.

Word 4.0 on the IBM PC

To complement our **Word on the Macintosh** short course, we are developing an introductory course for **Microsoft Word on the IBM PC**. In this fifteen-hour course you will learn the essentials of word processing: creating files; entering, editing, and formatting text; search and replace; spell checking; and printing. Features vital to academic work, such as footnoting and foreign-character input, will also be taught.

To find out more about the content of these courses, contact Patricia Hood at 978-4548.

Registration

For information about course dates, costs, and registration, contact Irene Rosiecki at 978-4565

Numerical Software for Personal Computers

Andrzej J. Pindor
APINDOR at UTORONTO

With the increasing power of personal computers, more and more people are acquiring micros on which they do their computations, instead of using mainframes or minicomputers. They have the computer on their desk, ready to work whenever they need it, and once the money is spent to buy it, they do not expect any additional costs. Unfortunately, the last statement is not entirely true. To do useful work you need software, and good software can be expensive. For example, to do numerical calculations using FORTRAN, you first need a FORTRAN compiler. Two popular ones at the moment are Microsoft FORTRAN and IBM Professional FORTRAN, both costing over $500. The IBM version is more expensive but does adhere more strictly to the FORTRAN-77 standard.

With a FORTRAN compiler in place, you soon discover a need for a subroutine library—otherwise you must "reinvent the wheel," writing programs to deal with typical numerical problems that you may encounter (e.g., you may have to program the calculations of an integral, a solution for a system of linear equations, or minimization of a complicated function of several variables). Writing these programs is time-consuming, and it is difficult to make them as efficient as code written by numerical experts. If you do not want your micro to be tied up for hours doing the calculations, you have to give some attention to the efficiency of the code. External information is available to help make these programs efficient. You can go to the books that publish source code for utility subroutines (e.g., *Numerical Recipes* by W.H. Press *et al.*, Cambridge University Press 1987). However, for wider selection and the most efficient codes, you probably have to turn to commercially available libraries. Some of these libraries are listed below, with present prices:

NAg FORTRAN PC50	US$ 276
NAg Workstation Library	US$ 432
IMSL MATH/PC Library	US$ 480
IMSL STAT/PC Library	US$ 480
MAGUS Numerical Analyst	US$ 200

Many software vendors offer site licenses whereby an organization can, upon paying a lump sum, use a given product on a large number of micros. With sufficient users participating, the cost for each individual installation is much lower than for a single-copy license.

In addition to low cost, a site license can provide a central source of advising help, since the central site also installs and uses a copy of the software. UTCS is currently evaluating some of the available packages, and reviews will be published in *ComputerNews*. A major difficulty in negotiating the first year of a site license is predicting demand for the software. Overestimates can be quite costly to the University. If you are interested in numerical subroutine libraries for micros, please let us know. If you already have a version of FORTRAN on your micro, or are planning to acquire one in the near future, this information is also important. If you are currently using a library, please share your experience with us, so that our evaluations can be more complete.

Please send comments, questions, and information to Andrzej Pindor, Room 202, 4 Bancroft Avenue, or phone me at 978-5045.

IMSL Libraries Edition 10 Update Guide

Andrzej J. Pindor
APINDOR at UTORONTO

The new IMSL Edition 10 libraries were described in the October/November and December issues of *ComputerNews*. We have just received from IMSL a user guide for those who need to convert their programs from Edition 9 to Edition 10. The guide goes through all the sections of the libraries, indicating which subroutines are new and which are enhanced, together with a short description for each; it also shows which subroutines have been removed. The guide is available from the UTCS Information Centre (4 Bancroft Avenue, Room 201) for $5.

ProComm Communications Program Seminar

March 28, 1988
9:00 - 11:00 a.m.

May 25, 1988
9:00 - 11:00 a.m.

ProComm is a general purpose communications program currently available to all U of T faculty, staff, and students. It is the resident communications program in the IBM Education Facility.

A seminar has been scheduled to introduce ProComm and its various features: terminal emulation (a number of popular ones will be reviewed); the dialing directory; file transfer protocols, such as Kermit and XMODEM; configuration and modem parameter settings; and the DOS gateway, which allows you to execute DOS commands and other programs while you are still in ProComm.

A course fee is attached to this seminar. Copies of ProComm are made available at no charge, but you must bring your own diskettes (two 5.25" or one 3.5").

To reserve a place in this seminar, please contact Irene Rosiecki at 978-4565.

Change Committee

Beverly Scarborough

Changes to Academic MVS Machine Services

1. The default printer type was changed from 3211 to 1403 (September 13, 1987).
2. IXF was removed, and IPF was installed (October 8, 1987).
3. Month-end was moved to the 25th of the month to synchronize with the the University's accounting system (November 25, 1987).

Changes to Academic VM/CMS Machine Services

1. CMS BMDP87 was released for User Test on CMS (December 1, 1987).

Changes to Other Systems and Services

1. A two-hour disconnect-if-idle was installed on both nodes of the PACX 2K (September 28, 1987).

Free NetNorth (Electronic Mail) Demonstration

March 28, 1988
11:00 a.m.- 12:30 noon

May 25, 1988
11:00 a.m.- 12:30 noon

Anyone interested in sending documents to colleagues or friends reliably, quickly, and inexpensively will not want to miss this demonstration. We will introduce you to the NetNorth/BITNET/EARN communications network, which is accessible from the CMS system. This network connects more than a thousand universities and research institutes in Europe, Asia, and North America. Sending documents or files over the network is very easy to learn.

The demonstration will last just over an hour. Included will be how to send mail and files to another institution, and how to talk directly to someone on the network. ***Please note this is a demonstration only.***

Space is limited. If you would like to attend one of these sessions, please contact Irene Rosiecki at 978-4565 to reserve a place.

Personnel Changes

Bach Trang has joined Operations as a Computer Operator I.

Peter Wong has joined Communications and Technical Support as an Engineering Technologist.

Rosa Esteireiro, one of the Tape Librarians, has left Operations to further her career. **Richard Foster** has joined UTCS Operations as the new Tape Librarian.

Michele Ross, the Waterloo Cooperative Student working in the Publications Group, has returned to school; our new Coop student is **Mark Vanderkam**.

Documents at UTCS

All vendor-produced documentation may be ordered through the UTCS Information Office, Room 206, Engineering Annex. UTCS documents and selected vendor documents are also stocked there for purchase. For more information on prices, call Dale Wright at 978-4990. Whenever feasible, documents are made available online, and users are encouraged to print their own copies. On the MVS and VM machines, special commands have been provided for this purpose.

To print online documents on:

IBM MVS
WYLBUR users type "do document?"
TSO users type "help document"
APL users type ")LOAD 1 UTCSGUIDE<RETURN>HELP"

IBM VM/CMS
Type "help document"

GP UNIX
Use *ipr* command

In these examples, the document to be printed is the UTCS Guide to Census Tapes (MANUAL/LISTING=CENSUS).
<RETURN> means RETURN or ENTER key.

TSO:	document census forms(yxle) <RETURN>
WYLBUR:	do document <RETURN> and respond to the prompts.
CMS:	document <RETURN> <RETURN> laser census listing (forms yxle <RETURN>
GP UNIX:	nohup ipr -8p -fyxle /usr/doc/utcs/census & <RETURN>

UTCS Documents in hardcopy:

New:

Previously announced:
Academic's Guide to Microcomputer Systems
Character Sets for Highspeed Printing
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics
UTCS GUIDE TO PRODUCTS AND SERVICES: Accounting
UTCS Catalogue: Numerical Products
UTCS Catalogue: Statistics Products
UTCS Catalogue: Text Products
UTCS Guide to Census Tapes
UTCS Guide to Kermit
UTCS Guide to Micro File Transfer Service
UTCS Guide to Text Processing on GP UNIX

UTCS Documents online	**MVS MANUAL**	**CMS LISTING**	**GP UNIX**	**Forms Code**
New:				
Previously announced:				
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction	INTRO	INTRO	/usr/doc/utcs/intro	*
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics	BASICS	BASICS	/usr/doc/utcs/basics	*
UTCS Catalogue: Access, Part 1	ACCESS1	ACCESS1	/usr/doc/utcs/access1	*
UTCS Catalogue: Access, Part 2	ACCESS2		/usr/doc/utcs/access2	*
UTCS Catalogue: IBM MVS Utilities	MVSUTIL	MVSUTIL		*
Product-Function List	UTILLIST	UTILLIST		BXQD
UTCS Catalogue: Numerical Products	NUMCAT	NUMCAT		*
Product-Function List	NUMLIST	NUMLIST		BXQD
UTCS Catalogue: Statistics Products	STATCAT	STATCAT		*
Product-Function List	STATLIST	STATLIST		BXQD
UTCS Catalogue: Text Products	TEXTCAT	TEXTCAT	/usr/doc/utcs/textcat	*
UTCS Guide to BMDP	BMDP	BMDP		*
UTCS Guide to Census Tapes	CENSUS	CENSUS	/usr/doc/utcs/census	*
UTCS Guide to GP UNIX			/usr/doc/utcs/gpunix	*
UTCS Guide to GPJS	GPJSX	GPJSX	/usr/doc/utcs/gpjs	*
UTCS Guide to Highspeed Printing	PRINT	PRINT	/usr/doc/utcs/print	*

* *Recommended forms code for the 8700 is YXLE unless otherwise stated.*
† *Use the 87set command. Type "help 87set".*

Documents continued

UTCS Documents online	MVS MANUAL	CMS LISTING	GP UNIX	Forms Code
New:				
Previously announced:				
UTCS Guide to IBM MVS Online Storage	IBMDISK	IBMDISK		*
UTCS Guide to Kermit	KERMIT	KERMIT	/usr/doc/utcs/kermit	*
UTCS Guide to Micro File Transfer Service	MICROXFR	MICROXFR		*
UTCS Guide to Micro Laser Printing	MICRLASR	MICRLASR		*
UTCS Guide to SAS	SAS	SAS		*
UTCS Guide to SCRIBE		SCRIBE		*
(For printing instructions, see page 1 of document)				
UTCS Guide to Series/1 Terminal Use	SERIES	SERIES		*
3270 Emulation:				
Cybernex APL100 and Volker Craig VC404	CYBER	CYBER		*
DM1520	DM1520	DM1520		*
Hardcopy Terminal	HARDCOPY	HARDCOPY		*
IBM 3101	IBM3101	IBM3101		*
IBM PC Kermit	PCKERMIT	PCKERMIT		*
SOROC IO	SOROC	SOROC		*
VT52	VT52	VT52		*
VT100	VT100	VT100		*
UTCS Guide to SPSS	SPSS	SPSS		*
UTCS Guide to SUBUTILS	SUBUTILS	SUBUTILS		*
UTCS Guide to Text Processing on GP UNIX			/usr/doc/utcs/text	YXOG
UTCS Guide to TFW.MAK in SCRIBE		TFWMAK		*
UTCS Guide to TSO	TSOGD			*
UTCS Guide to UTDSUTIL	UTDSUTIL	UTDSUTIL		*
UTCS Guide to VM/CMS	CMSGD	CMSGD		*
UTCS Guide to WYLBUR	WYLINTRO			*
UTCS Rate Schedule (Commercial)		RATESCOM		†
UTCS Rate Schedule (External)		RATESEXT		†
UTCS Rate Schedule (Internal)		RATESINT		†
UTCS WYLBUR Tutorial	WYLTUTOR			*
Other Documentation online				
Kermit				
Kermit Protocol Manual	KERMITPM	KERMITPM		YXOE
Kermit User Guide	KERMITUG	KERMITUG		YXOF
ProComm				
ProComm Reference Manual	PROCOMM	PROCOMM		YXOE
VM Tape Documents				
TapeMap User's Guide and Reference		TAPEMAP		*
VMTAPE Messages and Codes		VMTMSGS		YXOE
VMTAPE User's Guide		VMTUSER		YXOE
VMSECURE				
VMSECURE User's Guide		VMSECURE		YXOE
Waterloo SCRIPT				
Reference Manual	WSCRPTRF	WSCRPTRF		YXLC
User's Guide	WSCRPTUG	WSCRPTUG		YXLC
Using SCRIPT in MVS/TSO	WSCRPTSO	WSCRPTSO		YXLC
Waterloo SCRIPT and a PostScript Printer	WSCRPTPST	WSCRPTPS		YXLC
Formula Processor Summary	WSCRPTFP	WSCRPTFP		YXLC
GML User's Guide	GMLUG	GMLUG		YXLC
GML Reference Summary	GMLRFSUM	GMLRFSUM		YXLC
OBS WYLBUR				
Messages and Codes	WYLMSGS			YXLD
Qwik Files	WYLQWIK			YXLD
Reference Summary	WYLREFCD			YXLG
Reference Manual	WYLREFMN			YXLD
7.0 Release Guide	WYLREL70			YXLC
User Guide	WYLUSER			YXLD
Electronic Mail				
A User's Guide to Electronic MAIL		MAILBOOK		YXOC

* *Recommended forms code for the 8700 is YXLE unless otherwise stated.*
† *Use the 87set command. Type "help 87set".*

Consulting and Enquiries

Applications Support & Advising Supervisor	Alex Nishri	BC214	978-7109
External Marketing Consultant	Ihor Prociuk	BC217	978-6875
Erindale College	Joe Lim	ER2035	828-5311
Information Office	Dale Wright	BC201	978-4990
Account & Access Code Enquiries (U of T)	Christine Gray	MP337	978-8703
Account & Access Code Enquiries (External)	Sylvia May	MP337	978-7148
IBM PC Maintenance	Kam Mark	BC103	978-5050
Tape Library (Academic Services)	Richard Foster	MP368	978-7319
Tape Library (Administrative Services)	Miranda Fong	MP368	978-6693
Terminal Service	Rosi Tseu	BC105	978-3787
UTCS Noncredit Short Courses	Irene Rosiecki	BC217	978-4565

Consulting & Advising Services:	978-HELP
CMS, TSO and GP UNIX userids:	ADVISOR
CMS Userid for mail problems:	POSTMSTR
System Status Enquiries (GP UNIX)	978-4318
System Status Enquiries (IBM)	978-7393
Interactive Services 300 (bps)	978-6200
Interactive Services 1200 (bps)	978-3959
Interactive Services 2400 (bps)	978-7239
Datapac	4320 0056
Telnet	0302043200056
Tymnet	<backspace>DPAC;302043200056

UTCS Directory

Director:	Dr. Warren Jackson	MP350	978-8948	WCJ at UTORONTO *
Associate Director:	Eugene Siciunas	MP350	978-5058	EUGENE at UTORONTO *
Managers:				
Communications &Technical Support	Norman Housley	BC121B	978-4967	NORMAN at UTORONTO *
Information Centre	Don Gibson	BC217	978-7331	DON at UTORONTO *
Internal Systems Support	Ron Vander Kraats	MP350	978-4428	RVK at UTORONTO *
Operations Support	Dr. Bob Chambers	MP350	978-7092	
Systems Support	Bill Lauriston	MP331	978-3579	BILL at UTORONTO *

Committees on Computing

Committee on Administrative Computing	Chair	Janice Oliver	978-4322	
UTCS Board	Chair	Prof. D.M. Nowlan	978-4984	NOWLAN at UTORONTO *
Supercompter Users' Group at U of T	Chair	Prof. P.P. Kronberg	978-4971	

Legend

BC = Bancroft Building
ER = Erindale
MP = McLennan Physical Labs

* NetNorth/BITNET/EARN

UTCS Terminal and Advising Sites

Names and Locations

Central Advising Office (CAO), 978-HELP
Engineering Annex (EA, CDF), 11 King's College Road, Rooms 103, 107, 107B, 201, 203
Erindale College (Erin), 828-5339, Mississauga Road, Erindale Campus, Rooms 2037, 2039A-B-C, 2045
Robarts, Robarts Library, 130 St. George St., Room 1061A
Sidney Smith (Sidney), 100 St. George St., Rooms 1071, 2105
St.Michael's College, 121 St. Joseph St., Room 107
Trinity College, 6 Hoskins Ave., Room 024
Victoria University, 73 Queens Park Cres.

Sites	Hours of Access				Restrictions*	Advising
	Mon-Thurs	Fri	Sat	Sun		
CAO	10:00-18:00	10:00-18:00	closed	closed	Research	978-HELP
CDF	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	No
EA	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Erin (2039) □	9:00-17:00	9:00-17:00	12:00-16:00	12:00-16:00	Research	Rm 2005
(2045)	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	Rm 2005
(235)†	8:00-22:00	8:00-17:00	closed	closed	None	Rm 2046
Robarts	8:30-24:00	8:30-24:00	9:00-22:00	13:00-22:00	None	978-HELP for Research
Sidney	7:00-24:00	7:00-24:00	7:00-24:00	7:00-24:00	None	978-HELP for Research
St.Michael's	24 hrs	24 hrs	24 hrs	24 hrs	None	Arranged by College
Trinity	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	None	Arranged by College
Victoria	8:30-23:00	8:30-23:00	closed	closed	None	Arranged by College

Legend
* Research includes graduates, faculty, staff.
□ Key access available.
† Access restricted to building hours.

Advising Hours

CAO	Monday through Friday, 10:00 - 18:00
Erin	Monday through Friday, 09:00 - 20:00

Sites	PACX	Network Terminal Server	CMS	Printers Terminals	CDF/PC
CDF	N	N	N	Y	N
EA	N	Y	N	Y	N
Erin	Y	Y	N	Y	N
Robarts	Y	N	N	Y	Y
Sidney	N	Y	N	Y	Y
St.Michael's	Y	N	N	Y	Y
Trinity	N	N	Y	Y	Y
Victoria	Y	N	N	Y	N

(Y=yes, N=no)

UTCS Services

UTCS Centrally Owned and Managed

Systems

IBM VM/CMS

- General Purpose Timesharing; access to NetNorth, BITNET, and EARN networks; access to CRAY X-MP
- 4381-R03 processor, 32 megabytes of memory
- CP operating system, VM/SP HPO R4.2
- CMS timesharing system, VM/SP Release 4
- RSCS spooling system, Release 3
- CRAY station Release 4

IBM MVS

- TSO, WYLBUR, APL, Batch
- runs as a preferred guest under VM
- MVS operating system
- Xerox 8700 Laser Printing

GP UNIX
Technical Assistance: 978-8853

- General Purpose Timesharing under SUN UNIX 3.2
- SUN 3/280, 8 megabytes of memory
- access to Linotronic typesetter
- offers a sophisticated and powerful environment for text processing
- offers a sophisticated programming environment suitable for commercial software development or testing
- full access to USENET, an electronic technical information exchange facility
- offers excellent electronic mail facilities and ability to send or receive mail from most computer networks worldwide, such as UUCPNET, ARPANET, NetNorth, BITNET, CSNET, CDNNET

Services

Communications & Technical Support
Primary Phones: 978-3787, 978-4967

- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- Field Service Group installs and maintains communications and computer systems, particularly IBM PCs and Micro Vaxes, on a contract basis or on a cost-per-call basis.
- provides consulting on computer systems technology and installs computer systems
- provides access between the IBM systems and machines using UNIX, VMS and other operating systems. Ethernet, Pronet, and IBM TRN technologies are used over various transmission media including optical fibre. More basic communications techniques are also used for moderate speed links.
- provides consulting on local area networking and installs LANS
- provides access to NetNorth (BITNET), the North American Universities Network; and USENET, the UNIX networking fraternity
- will provide a communications solution to department needs on a contractual basis

Information Centre
Primary Phone: 978-HELP

- Provides assistance in use of electronic messaging, including use of Local Area Networks (LANS); NetNorth/BITNET/EARN, the world Universities network; CDNNET, the Canadian X.400 network; ARPANET; CSNET; USENET; and other international connections.
- provides advising, consulting and documentation on:
    - command languages, including CMS, TSO, WYLBUR, JCL, and UNIX
    - high level languages, including FORTRAN, and PL/I
    - packages and libraries, including SAS, SPSS-X, BMDP, IMSL, and NAg
    - editors and formatters, including XEDIT, TSO, WYLBUR, ed, SCRIBE, nroff/troff
- provides general micro support
    - selection consulting for hardware and software
    - Micro Lab for evaluation of hardware and software
    - advice on University discounts
    - media conversion and data transfer
    - operates UTCS Microcomputer Bulletin Board System
    - offers Micro Laser Printing Service
    - offers 35mm slide production service using Polaroid Palette
    - administers Local Area Network of PCs for Education Facility
    - administers Macintosh Education Facility
- high quality typesetting
- installs and maintains application packages
- provides short courses and seminars on the more popular services and software packages

> The principal mandate of UTCS is to plan, implement, and operate facilites and "common-carrier" networks, and to plan and support divisional, departmental or project computer facilities as requested.

Facilities Managed by UTCS

Administrative Computing

- administrative IMS/VS, DB/DC, DB2, Batch, and TS0
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system

Computer Disciplines Facility/VAX

VAX-11/780, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory

- Computer Science interactive access
- UNIX (Berkeley UNIX 4.3BSD)

Computer Disciplines Facility/PC

- 97 TI Professional Computers connected in a Local Area Network
- introductory Computer Science instruction
- MS-DOS with Turing environment

Erindale College Systems

VAX 8200, 8 megabytes of memory
- instructional access using VMS
- research access

VAX-11/750, 5 megabytes of memory
- instructional access using UNIX (Berkeley UNIX 4.3BSD)

Institutional Relations System

VAX-11/750, 8 megabytes of memory
- database services to the owner departments using VMS

EPAS Facility

- 4361-5 processor, 16 megabytes of memory
- general VM/CMS services to the owner departments

Ontario Centre for Large Scale Computation (OCLSC)

- Cray Research Inc. X-MP/22
- 2 processors, 2 megawords main memory
- solid state disk (SSD) with 16 megawords of storage
- COS 1.15 operating system
- VAX-11/750 + microVAX II providing VMS front-end services
- VM front-end services provided by UTCS 4381-R03

UTCS Software List

SOFTWARE LIST for MAINFRAME COMPUTERS MVS, VM/CMS, UNIX

Each programming language or package available at UTCS has a support level. In general, Class A Products receive full support, Class B limited support (as time and resources allow), Class C no active support.
For complete details of UTCS product support policy, see the UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction.

Package/Compiler	System	Support	Version
Communications			
Kermit	VM/CMS	A	---
	UNIX	B	4C(058)
FTS	VM/CMS	A	---
MAIL/MAILBOOK	VM/CMS	A	86.359
MICROLASER	VM/CMS	A	---
macget/macput	UNIX	C	---
netcopy, netexec, to (NetNorth Tools)	UNIX	B	---
xmodem	UNIX	C	---
ftp,rsh,rlogin,telnet,rep *(Access via TCP/IP to most of the networked machines on all three campuses)*	UNIX	B	---
rn/Pnews	UNIX	B	---
mail,mh,Mail	UNIX	-	---
rje	UNIX	B	---
Graphics			
PLOTBASIC (FORTRAN)	MVS	A	---
	VM/CMS	C	---
PLOTBASIC EXTENDED ROUTINES	MVS	A	---
SAS/GRAPH	MVS	A	5.16
	VM/CMS	A	5.16
SURFACE II	MVS	C	---
Languages			
APL (Sharp)	MVS	C	May 83
ALGOLW (Stanford)	MVS	C	n/a
ASSEMBLER(F)	MVS	C	2.1
	VM/CMS	C	---
A.A.E.C. PASCAL	MVS	C	2.0
Concurrent Euclid	VM/CMS	C	1.9
FORTRAN H EXT.	MVS	B	2.2.1
FORTUTILS	VM/CMS	A	2.2
LISP	MVS	C	---
MARKEXAM	MVS	C	---
PL/C	MVS	C	---
PL/I CHECKOUT COMPILER	MVS	B	1.3.0
	VM/CMS	B	1.3.0
PL/I OPT COMPILER	MVS	B	1.5.1
	VM/CMS	B	1.5.1
REXX	VM/CMS	A	---
SNOBOL 4	MVS	C	3.5
	VM/CMS	C	3.5
SPITBOL	MVS	C	---
Turing	VM/CMS	C	---
UTCS FORTRAN UTILITIES	MVS	B	---
VS COBOL	MVS	C	2.4
VS FORTRAN	MVS	A	1.4.1
	VM/CMS	A	1.4.1
VS Pascal	VM/CMS	C	2.2
WATBOL	MVS	C	V3L2
Waterloo C	VM/CMS	C	1.3
WATFIV	MVS	B	---
	VM/CMS	C	V2L0
WATFOR-77	VM/CMS	A	1.3
cc	UNIX	A	---
f77	UNIX	C	---
ratfor	UNIX	C	BSD std.
ttc	UNIX	C	---
pc	UNIX	C	BSD std.
yacc	UNIX	C	---
awk	UNIX	C	---
adb,dbx	UNIX	C	BSD std.
Numerical			
DYNAMO	MVS	B	4.07
EISPACK	MVS	C	4
FORMAC	MVS	C	---
FUNPACK	MVS	C	---
GPSS	MVS	A	Rel.1, Mod. Level 4
IMSL	MVS	A	9.2
	VM/CMS	A	9.2

Software List continued

Package/Compiler	System	Support	Version
LINPACK	MVS	C	---
	VM/CMS	C	---
MINOS	MVS	C	4.0
MINPACK	MVS	C	1
MPSX	MVS	C	Rel.1, Mod. Level 6
NAg	MVS	A	Mark 11
Statistical			
BMD	MVS	C	---
BMDP	MVS	A	Level 85, Level 87
	VM/CMS	A	Level 85, Level 87
GENSTAT	MVS	C	4.04B
Minitab	VM/CMS	B	5.1
NAg	MVS	A	Mark 11
NTSYS	MVS	C	Dec. 1982
SAS	MVS	A	5.16
	VM/CMS	A	5.16
SPSS	MVS	C	9.1
SPSS^x	MVS	A	2.2
	VM/CMS	A	2.2
TSP	MVS	C	3.5
Text Processing			
COGS (Concordance Generating System)	MVS	B	3.1
KWIC	MVS	C	---
OCP (Oxford Concordance Program)	MVS	C	1.4
SCRIBE	VM/CMS	A	4(1400)-1
Waterloo SCRIPT	MVS	B	85.1
	VM/CMS	B	86.1
XEDIT	VM/CMS	A	---
8700 Pseudotypesetting	VM/CMS	A	n/a
MICROLASER	VM/CMS	A	---
ed	UNIX	A	---
vi	UNIX	C	---
cmacs	UNIX	C	---
spell	UNIX	C	---
diction/explain	UNIX	C	---
eqn	UNIX	A	---
tbl	UNIX	A	---
pic	UNIX	C	---
troff	UNIX	A	---
nroff	UNIX	A	---
TeX	UNIX	C	---
Utilities			
DFSORT	MVS	A	6.0
DSMAP	MVS	A	---
FILEBOL	MVS	C	---
FORTUTILS	VM/CMS	A	2.2
GRIPE	MVS	A	---
IBM UTILITIES	MVS		---
IEBGENER	MVS	A	---
IEBCOPY	MVS	A	---
IEHMOVE	MVS	A	---
TAPEPRT	MVS	A	---
TAPEEXRAY	MVS	A	---
TCOPY	MVS	A	---
TPRINT	VM/CMS	C	---
UTCS FORTRAN UTILITIES	MVS	B	---
crypt	UNIX	A	BSD std.
compress	UNIX	C	BSD std.
csh	UNIX	B	BSD std.
diff	UNIX	A	BSD std.
grep	UNIX	A	BSD std.
ipr	UNIX	B	---
learn	UNIX	C	BSD std.
patch	UNIX	C	---
sed	UNIX	A	BSD std.
sort	UNIX	A	BSD std.
sh	UNIX	A	BSD std.
tar	UNIX	A	BSD std.
uniq	UNIX	A	BSD std.

Software List continued

SOFTWARE LIST for MICROCOMPUTERS

The following are microcomputer software packages for which UTCS can provide either support or some information. As with mainframe products, micro packages receive full support (Class A), limited support (Class B), or no active support (Class C). The specific criteria differ from those for mainframe classes and are outlined in the *Academic's Guide to Microcomputer Systems.*

Package/Compiler	Support	Version
Communications		
Kermit (MS-DOS)	A	2.27d
Kermit (APPLE II)	A	---
Kermit (CP/M)	C	---
Kermit (Macintosh)	B	0.8(35)
PC TALK3	C	---
PC PLOT III	A	---
ProComm	A	2.42 UT
MacTerminal	B	---
WYLBUR/PC	C	---
Database Managers		
4th Dimension	B	Int. 1.03
AskSam	C	2.2
Clipper	B	---
DATAEASE	B	---
dBASE II (CP/M)	B	---
dBASE II (MS-DOS)	C	--
dBASE III (MS-DOS)	A	1.1
dBASE III Plus	A	1.1
dBIIICompiler	C	1.1
FoxBASE	C	2.14u
Notebook II	B	2.03
REFLEX	B	---
ViewFinder III	B	---
ZyINDEX	B	---
Desktop Publishing		
PageMaker (Macintosh)	B	2.0a
PageMaker (IBM PC)	B	1.0a
Ventura (IBM PC)	B	1.1
XPress (Macintosh)	C	1.0
Graphics		
DR HALO	C	---
Illustrator	B	1.0
Lotus 1-2-3	B	---
Microsoft CHART (Macintosh)	C	---
MacDraw	C	---
MacPaint	B	---
WATCOM GKS	B	---
35mm Express	B	---
Freelance Plus	B	2.0
Languages		
BASIC	A	---
Microsoft FORTRAN	C	---
TURBO Pascal	B	---
WATFOR-77	A	---
Operating Systems, Utilities		
APPLE Turnover (Macintosh)	A	---
CP/M	B	---
FASTBACK	B	---
Finder (Macintosh)	A	5.5
Hypercard (Macintosh)	A	1.01
PC-DOS	A	3.2
Sidekick	B	---
SuperKey	C	---
System (Macintosh)	A	4.1
TURBO Lightning	C	---
XenoDisk	A	1.41
Spreadsheet		
APPLEWORKS	C	---
HAL	B	---
Lotus 1-2-3	B	2.01
Multiplan (Macintosh)	C	---

Software List continued

Package/Compiler	Support	Version
Sound		
SoundWave (Macintosh)	B	1.0
Statistical		
Minitab	C	---
PowerStat	C	1.04
SAS/PC	A	6.02
SPSS/PC +	A	---
STATPRO	C	2.0c
Statview (Macintosh)	C	1.0
Word Processing		
Gutenberg Senior	C	---
FinalWord II	B	2.0
MacWrite	C	---
Manuscript	C	---
Microsoft Word (Macintosh)	A	3.01
Microsoft Word (MS-DOS)	A	4.0
Nota Bene	B	2.0
T^3	C	---
Volkswriter Scientific	C	---
WordPerfect	A	4.1; 4.2
WordStar	B	---

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